AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 13, 15, and 29 of the Application as follows, and cancel Claims 10, 24, and 31 of the Application, without prejudice or disclaimer to continued examination on the merits:

1. (Currently Amended): A method of detecting network elements in an optical communications network, the method comprising:

at an initiating network element:

generating a neighbor discovery message including a requested hierarchy level at which neighbor discovery is requested; and-

transmitting the neighbor discovery message downstream along the optical communications network;

at a downstream network element:

receiving the neighbor discovery message;

determining if the downstream network element operates at the requested hierarchy level;

generating a responding neighbor discovery message if the downstream network element operates at the requested hierarchy level; and-

transmitting the responding neighbor discovery message to the initiating network element-; and

transmitting a don't care message downstream along the optical communications network upon the downstream network element determining that the downstream network element operates at the requested hierarchy level.

2. (Original): The method of claim 1 further comprising the downstream network element forwarding the neighbor discovery message downstream on the optical communications network if the downstream network element does not operate at the requested hierarchy level.

3. (Original): The method of claim 1 wherein said determining if the downstream network element operates at the requested hierarchy level includes determining if the downstream network element operates at or above the requested hierarchy level.

4. (Original): The method of claim 1 wherein the neighbor discovery message includes a network element identifier.

5. (Original): The method of claim 1 wherein the neighbor discovery message includes a network element port identifier corresponding to a port of the initiating network element from which the neighbor discovery message was transmitted.

6. (Original): The method of claim 1 wherein the responding neighbor discovery message includes a network element hierarchy level identifying a level at which the downstream network element operates.

7. (Original): The method of claim 1 wherein the responding neighbor discovery message includes a network element identifier.

8. (Original): The method of claim 7 wherein the responding neighbor discovery message includes a network element port identifier corresponding to a port of the downstream network element from which the responding neighbor discovery message was transmitted.

9. (Original): The method of claim 8 further comprising the downstream network element providing an out-of-band confirmation message to the initiating network element, the out-of-band confirmation message including the network element identifier and the network element port identifier.

10. (Canceled)

11. (Original): The method of claim 1 further comprising initiating a timer upon said transmitting the neighbor discovery message downstream along the optical communications network and logging an error if the timer reaches a determined value before a responding neighbor discovery message is received at the initiating network element.

12. (Original): The method of claim 1 wherein the initiating network element repeats said transmitting the neighbor discovery message downstream along the optical communications network until a determined number of responding neighbor discovery messages are received.

13. (Currently Amended): The method of claim 1 further comprising the initiating network element generating a~ an additional neighbor discovery message, the additional neighbor discovery message including a different hierarchy level at which neighbor discovery is requested.

14. (Original): The method of claim 1 wherein the initiating network element is client equipment coupled to the optical communications network.

15. (Currently Amended): An optical communications network, comprising:

    an initiating network element:

        said initiating network element generating a neighbor discovery message, the neighbor discovery message including a requested hierarchy level at which neighbor discovery is requested; and

        said initiating network element transmitting the neighbor discovery message downstream along the optical communications network; ~~and,~~

a downstream network element in communication with said initiating network element:

said downstream network element receiving the neighbor discovery message;

said downstream network element determining if the downstream network element operates at the requested hierarchy level;

said downstream network element generating a responding neighbor discovery message if the downstream network element operates at the requested hierarchy level;

said downstream network element transmitting the responding neighbor discovery message to the initiating network element-; and

said downstream network element transmitting a don't care message downstream along the optical communications network upon determining that said downstream network element operates at the requested hierarchy level.

16. (Original): The optical communications network of claim 15 wherein said downstream network element forwards the neighbor discovery message downstream on the optical communications network if said downstream network element does not operate at the requested hierarchy level.

17. (Original): The optical communications network of claim 15 wherein determining if the downstream network element operates at the requested hierarchy level includes determining if said downstream network element operates at or above the requested hierarchy level.

18. (Original): The optical communications network of claim 15 wherein the neighbor discovery message includes a network element identifier.

19. (Original): The optical communications network of claim 15 wherein the neighbor discovery message includes a network element port identifier corresponding to a port from where the neighbor discovery message was transmitted.

20. (Original): The optical communications network of claim 15 wherein the responding neighbor discovery message includes a hierarchy level at which said downstream network element operates.

21. (Original): The optical communications network of claim 15 wherein the responding neighbor discovery message includes a network element identifier.

22. (Original): The optical communications network of claim 21 wherein the responding neighbor discovery message includes a network element port identifier corresponding to a port from which the responding neighbor discovery message was transmitted.

23. (Original): The optical communications network of claim 22 wherein said downstream network element provides an out-of-band confirmation message to said initiating network element, the out-of-band confirmation message including the network element identifier and the network element port identifier.

24. (Canceled)

25. (Original): The optical communications network of claim 15 further comprising a timer initiated upon said transmitting the neighbor discovery message downstream along the optical communications network, said initiating network element logging an error if said timer reaches a determined value before the responding neighbor discovery message is received at said initiating network element.

26. (Original): The optical communications network of claim 15 wherein said initiating network element repeats transmitting the neighbor discovery message downstream along the optical communications network until a determined number of responding neighbor discovery messages are received.

27. (Original): The optical communications network of claim 15 wherein said initiating network element generates an additional neighbor discovery message including a different hierarchy level at which neighbor discovery is requested.

28. (Original): The optical communications network of claim 15 wherein said initiating network element is client equipment coupled to the optical communications network.

29. (Currently Amended): A storage medium encoded with machine-readable computer program code for detecting network elements in an optical communications network, the storage medium including instructions for causing a network element to implement a method comprising:

in an initiating mode:

generating a neighbor discovery message, the neighbor discovery message including a requested hierarchy level at which neighbor discovery is requested;

transmitting the neighbor discovery message downstream along the optical communications network; and

receiving a responding neighbor discovery message from a downstream network element operating at the requested hierarchy level;

in a responding mode:

receiving a neighbor discovery message from an upstream network element, the neighbor discovery message including a requested hierarchy level at which neighbor discovery is requested;

determining if the network element operates at the requested hierarchy level;

generating a responding neighbor discovery message if the network element operates at the requested hierarchy level; ~~and,~~

transmitting the responding neighbor discovery message to the upstream network element~~,~~; and

providing an out-of-band confirmation message to the upstream network element, the out-of-band confirmation message including a network element identifier and a network element port identifier identifying a port of the network element from which the responding neighbor discovery message was transmitted.

30. (Original): The storage medium of claim 29 wherein said determining if the downstream network element operates at the requested hierarchy level includes determining if the downstream network element operates at or above the requested hierarchy level.

31. (Canceled)